

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER

101159-26406

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)

N/A 10/088215

INTERNATIONAL APPLICATION NO.
PCT/GB00/03057INTERNATIONAL FILING DATE
08 August 2000PRIORITY DATE CLAIMED
26 August 1999

TITLE OF INVENTION

METHOD TO ERADICATE MITES AND TO DENATURE THEIR ALLERGENS

APPLICANT(S) FOR DO/EO/US

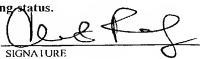
KENNETH HOULBROOK

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.

1. ☐ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is attached hereto.
 - b. ☒ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made, however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
14. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4)
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☐ Other items or information:

| | | | |
|--|--------------|---|----------------------------------|
| U.S. APPLICATION NO. (if known) 107 088215 INTERNATIONAL APPLICATION NO. PCT/GB00/03057 | | ATTORNEY'S DOCKET NUMBER 101159-26404 | |
| 21. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO. \$1040.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfy provisions of PCT Article 33(1)-(4) \$100.00 ENTER APPROPRIATE BASIC FEE AMOUNT = | | CALCULATIONS PTO USE ONLY | |
| Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)) | | \$ 890.00 \$ 130.00 | |
| CLAIMS | NUMBER FILED | NUMBER EXTRA | RATE |
| Total claims | 21 - 20 = | 1 | x \$18.00 |
| Independent claims | 1 - 3 = | 0 | x \$84.00 |
| MULTIPLE DEPENDENT CLAIM(S) (if applicable) | | | + \$280.00 |
| TOTAL OF ABOVE CALCULATIONS = | | | \$ 1,038.00 |
| <input checked="" type="checkbox"/> Applicant claims small entity status. Sec 37 CFR 1.27. The fees indicated above are reduced by 1/2. | | | \$ (519.00) |
| SUBTOTAL = | | | \$ 519.00 |
| Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)). | | | \$ |
| TOTAL NATIONAL FEE = | | | \$ 519.00 |
| Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property + | | | \$ |
| TOTAL FEES ENCLOSED = | | | \$ 519.00 |
| | | | Amount to be refunded: \$ |
| | | | charged: \$ |
| a. <input type="checkbox"/> A check in the amount of \$ _____ to cover the above fees is enclosed b. <input checked="" type="checkbox"/> Please charge my Deposit Account No. <u>501760</u> in the amount of \$ <u>519.00</u> to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>501760</u> . A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038 | | | |
| NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status. | | | |
| SEND ALL CORRESPONDENCE TO Higgs, Fletcher & Mack LLP 401 West A Street, Suite 2600 San Diego, CA 92101 | | | |
|  SIGNATURE Charles F. Reidelbach, Jr., Esq. NAME Registration No. 36,649 REGISTRATION NUMBER | | | |

Attorney's Docket No. 101159-26406

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor:

KENNETH HOULBROOK

For:

METHOD TO ERADICATE MITES AND TO DENATURE THEIR ALLERGENS

CERTIFICATION UNDER 37 CFR §§1.8(a) and 1.10

I hereby certify that this New Application Transmittal and the documents referred to as enclosed therein are being:

- ☒ deposited with the United States Post Service on this date, February 25, 2002, in an envelope addressed to:
Box Patent Application, Assistant Commissioner for Patents, Washington, D.C. 20231.
☐ with sufficient postage as first class mail (37 CFR §1.8(a))
☒ as "Express Mail Post Office to Addressee" Mailing Label No. EK235406639US (37 CFR §1.10)

Marianne Boyles



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Houlbrook, Kenneth

Art Unit: Unknown

Serial No.: Pending

Attorney

Docket No.: 101159-26406

Filed: Herewith

Title: METHOD TO ERADICATE
MITES AND TO DENATURE
THEIR ALLERGENSPRELIMINARY AMENDMENTAssistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

This Preliminary Amendment is submitted in conjunction with Applicant's new utility application:

IN THE CLAIMS

Please cancel claim 18.

8. (Once Amended) The method according to claim 7, wherein the steam treatment process comprises injecting steam into the textile articles while [garments whilst] they are being tumbled.

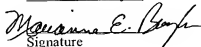
CERTIFICATE OF EXPRESS MAILING UNDER 37 CFR §§1.8(a) and 1.10

I hereby certify that this Preliminary Amendment and the documents referred to as enclosed therein are being deposited with the United States Post Service on this date, February 25, 2002, in an envelope addressed to: Assistant Commissioner for Patents, Box Amendment, Washington, D.C. 20231.

- ☐ with sufficient postage as first class mail (37 CFR §1.8(a))
☒ as "Express Mail Post Office to Addressee" Mailing Label No. EK235406639 (37 CFR §1.10)

Dated: February 25, 2002

Marianne E. Boyles


Signature

9. (Once Amended) The method according to claim 8, wherein the steam is injected into the textile articles [garments] for a short burst.
11. (Once Amended) The method according to claim 9 [or 10], wherein after the short burst, the textile articles [garments] are tumbled in the presence of the steam for a delay interval.
13. (Once Amended) The method according to claim 11 [9 or 10], wherein the cycle of short burst and delay interval is repeated.
14. (Once Amended) The method according to claim 5 [any of claims 5 to 13], wherein the textile articles [garments] are heated for a pre heat period before being steam treated.
16. (Once Amended) The method according to claim 15, wherein the textile articles [garments] are pre heated to a temperature in the region of 60-65 degrees centigrade.
22. (Once Amended) The method according to claim 1 [any preceding claim], wherein the stage comprising the use of steam for the killing of, and/or the de naturing of allergens of, mites in textile articles, is carried out on the articles while [whilst] they are at ambient temperature.

REMARKS

The claims have been amended to make them more readable.

METHOD TO ERADICATE MITES AND TO DENATURE THEIR ALLERGENS

This invention relates to the eradication of mites and/or denaturing of their allergens (in particular Der p 1 and Der p 2), for the improvement of living conditions for asthma and the like sufferers, and the invention achieves this in specific and effective ways.

The invention has specific application to the eradication of the house dust mite (HDM) and its allergens which are extremely prevalent in domestic textile articles, specifically carpets and bedding, including mattresses, curtains, chairs, toys and the like. The present invention is also applicable to the eradication of other allergens, such as animal (dog and cat) allergens, and various allergens connected with insects such as cockroaches. As the main application of the present invention is however the HDM and its allergen, reference is made only to such mites hereinafter in the interests of simplicity of description.

The invention represents a breakthrough in relation to the problem that the HDM allergens are the major cause of discomfort to asthma and the like sufferers as evidenced by medical studies (See M J Bluff "Use of Liquid Nitrogen in the Control of House Dust Mite Population" Clinical Allergy, 1986 - volume 16, pages 41 to 47).

The present invention has particular application to the treatment of articles of a portable nature, such as clothing and soft toys, which act as a means for transportation for mites and allergens, and bedding which also constitute breeding grounds for the HDM. The invention in its various aspects is not however to be considered to be limited to such articles. The treatment to which

the invention relates is one whereby the HDM (Dermatophagoides Pteronyssinus) may be killed, and/or allergen contained in its droppings may be de-natured.

The HDM, as its name suggests, inhabits indoor environments, in particular those inhabited by humans or animals. Amounts of microscopic flakes of skin are shed continually by humans or animals, and these flakes not only fall to the floor and onto furnishings in a household, but also accumulate in articles of clothing and toys and the like; the skin flakes will gradually seat within the article. The HDM feeds from these skin flakes as they decompose, and it will be appreciated that where dead skin collects, concentrations of HDM are found. Textiles are particularly susceptible to infestation by HDM since skin particles collect in the spaces between the fibres of the textile, in which spaces the HDMs are able to live and reproduce generally without excess hindrance.

Research has shown that the effects of living in environments free of HDMS, such as hospitals, where few places are found for the HDM to live and breed, is often beneficial to humans with a propensity to develop respiratory problems such as asthma and other diseases such as rinitis and eczema. It is believed that the group of allergens called Der p 1 and Der p 2 (herein "HDM allergen"), associated with the faecal pellets of the mites, is a contributing factor if not a major cause of these diseases. It is believed that the HDM allergen causes an allergic reaction which brings about inflammation of tissue at the surface of the bronchioles in the lungs of an asthmatic person where the allergen comes to rest, where the inflammation causes breathing difficulties.

Methods are known for the treatment of domestic textiles for the eradication of the HDM, and the de-naturing of the allergen, but sufferers of asthma and parents are so fastidious about keeping clear of HDM and the allergen, that they go to great lengths to eradicate the HDM and to de-nature the allergen.

The invention extends the capability to eliminate the HDM and the allergen, and provides various aspects.

The invention extends the capability to eliminate the HDM and the allergen, and provides in one aspect that when clothes are sent to a dry cleaner or laundry for cleaning, they are also subjected to a treatment, which is either the dry cleaning or laundering treatment or both with suitable modification to kill the HDM and/or de-nature the allergen, or are subjected to a separate process for this purpose, so that the clothes are not only dry cleaned or laundered, but are also "mite treated" or similar. The dry cleaning and/or laundering and/or other treatment can be considered as the processing treatment, whilst the other treatment is the "mite treatment".

Where the processing treatment itself involves steaming, it is modified to provide the mite treatment, in that the clothes are subjected to additional steaming in terms of time and/or temperature

A dry cleaners or laundry is an ideal location for the treatment to be carried out, as the processing units will have the necessary equipment to perform the method readily, and if not they will still be suitable locations for providing any necessary additional equipment as may be required, but in any event, they will be ideally situated to advertise that they can also provide a "mite

eradication treatment" which will encourage customers who are allergy sufferers, or who have allergy sufferers within the family.

This aspect of the invention provides a method which enhances a trading method, and make use of existing establishments to provide a considerable benefit to asthma and the like sufferers.

Specifically, at a dry cleaners there is a tumble drier machine, which may also be the dry cleaning machine. The garments are preferably treated in such machine with steam to perform the eradication treatment.

In one example, the garments are dry cleaned, and then immediately or after a delay, they are introduced into the tumble drier machine, and are subjected firstly a pre heat treatment for approximately two minutes during which they are heated to 60 to 65 degrees centigrade, following which the steam is injected into the garments for a short burst in the order of 10 seconds at a pressure of 60 psi, and then the garments and continued to be tumbled in the steam for a post treatment period of approximately 20 secs. This cycle of steam injection and post treatment may be repeated as many times as desired, but it is believed that only two cycles will be needed.

After the steam treatment, the garments may be dried and then allowed to cool, the garments being tumbled all the while.

The steam may be obtained by bleeding the steam from the steam coil when the tumble drier is of the type which has a steam heat exchanger for providing the heat for the usual tumble drying, or if the drier is electric then an additional unit for steam, attached or built into the machine or as a separate unit will be provided.

In another aspect, the invention provides that a tumble drier type machine is provided with the capability of applying steam to articles in the tumble drier, preferably whilst they are being tumbled.

This capability may be provided in any suitable way, including that the tumble drier is provided with an integral steam generator, and an appropriate programme for controlling the supply of steam to articles in the machine. Such control will be such as to vary the time during which the steam is applied, the temperature and dryness at which it is supplied, and when it is supplied in a cycle of operations including at least one other treatment, e.g. tumble drying, to which the articles may be subjected.

It is preferred that the articles be kept dry during the steaming by introducing hot air into the machine, as would be normal for the tumble drying of the articles if the machine were to be used for tumble drying.

Again, the steam may be provided by adapting an existing tumble drier to receive steam from a separate steam generation unit, but again the appropriate controls for varying time, temperature and dryness would be provided.

The articles which would be treated in this way would be ones capable of being inserted into the tumble drier, and would typically be clothes and soft fabric articles, such as toys. In the latter case, the tumble drier may be provided with a support for the toys so that they are held in predetermined position in the machine as steaming is taking place. For example, the support may be a basket in which the toys or the like are held, and the steam is arranged to be injected into the basket to treat the toys.

In another case, the support may comprise one or more spikes through which steam can be supplied, the toy or toys being impaled on the spike or spikes. The steam is injected into the toy or toys through the spike or spikes to treat the toy or toys from the inside, which is an extremely effective way of killing and denaturing deep seated mites and allergens. This idea is covered by European Patent Application No. 95922669.7. The support can take many forms. For example the support can be front loaded into the machine and the steam can also be adapted to be injected from the front of the machine, the loading door being adapted if needed for this purpose.

The steam treatment in a tumble drier need not be accompanied by other treatments such as heating with hot air, but hot air is preferred to keep the environment dry. If there is condensation in the machine, this can be dealt with by collection and removal. The collected condensate can be recycled.

In another form of treatment according to the invention, a former, such as an air and steam pressing former, to which articles such as clothes can be fitted is provided with a means of applying steam to the articles after they have been so fitted, the steam treatment being for a period sufficient to de nature the allergens and/or kill the mites in the manner indicated in the Earlier Application. Preferably, the steam is passed through the article from the inside to out

In the case of using steam, it will be appreciated that the steam has to be applied for a sufficient length of time to be effective in killing at least most of the mites, and/or denaturing of the allergens.

In experiments it has been indicated that there may be an advantage treating the articles with steam whilst they are still cold, or that is to say the articles need not be pre-heated before being contacted with the steam.

Also, it may be advantageous to use additives such as citrus oil in the treatment. Such additives may be instrumental in assisting the killing of the mites and the denaturing of the allergens, and/or they may be included for fragrance purposes. Such additives may be applied before or after the application of steam.

In a specific application of the invention, a tumble drier was modified to accept a steam nozzle from which steam could issue. The nozzle was mounted at the rear of the machine, and was located close to the rear plate of the machine drum so that steam issuing from the nozzle passed at any one time through several of the holes in the drum plate through which the hot air normally passes, the hot air simultaneously passing through the remaining holes. As the drum rotated, so the steam passed through different ones of the holes, the steam nozzle being stationary.

The unit for providing the steam comprised a boiler with controls and was of a similar nature to that disclosed in the abovementioned European Patent Application, but any suitable form of steam unit could be employed.

The tumble drier machine could be an industrial machine or a domestic machine, as required.

In another adaptation of the invention, there is provided a steaming unit in the form of a vacuum cleaner, which has the dual capability of vacuuming carpets, but also has a steam generating means and a steam outlet which is provided with a

nozzle adapting the nozzle for insertion into a core region of an article to be treated with steam in the manner set forth above.

Details of an actual test are given below.

Test using a modified tumble drier.

A tumble drier was modified as above so that steam could be injected into the drum whilst the drum was rotating.

Four Cotton overalls were tested.

Dust from mite infested mattresses was collected from a vacuum cleaner used to vacuum the mattresses, and pairs of small samples of 2mg were taken and put into small bags made from mite barrier material to provide a test sample bag and a corresponding control sample bag.

Four tumble dry/steam tests were carried out.

In each test, two test sample bags were put into the pockets of the garment, and the two control samples were identified for comparison. After each test, the test samples were removed from the garments, and the test samples and their control samples were put to one side for subsequent measuring.

In each test, the garments were put into the tumble drier, and with the drum rotating, were subjected to the following treatments.

Test 1

Steaming 2 minutes followed by Hot Air Heating 5 minutes.

Test 2.

Steaming 6 minutes followed by Hot Air Heating 5 minutes.

Test 3.

Heating 5 minutes followed by Steaming 2 minutes followed by Hot Air Heating 5 minutes

Test 4.

Heating 5 minutes followed by Steaming 6 minutes followed by Hot Air Heating 5 minutes

The amount of mites and allergens in the test sample after the test and the corresponding control sample were compared, and in each case a substantial reduction in the mites and allergens was observed. The results also indicated that the absence of the pre-heating step in Tests 3 and 4 gave better results.

The present invention can be practised at for example a dry cleaning organisation, to provide that the garments and other articles can be treated for mites and allergens, and this can be as part of the dry cleaning service, or as a separate service. Alternatively, the equipment can be for domestic use, and tumble driers, either dedicated or as part of a washing machine can be used for the purpose.

At some dry cleaning establishments, where for example more specialized garments, such as wedding dresses are dry cleaned, there are other machines such as steaming tunnels, and the process of the invention may be carried out in such a steaming

tunnel, which is a long chamber through which the articles to be treated move whilst being treated. This has the advantage that the articles can be kept isolated in a sterile atmosphere.

Where the invention is utilised in conjunction with dry cleaning, the invention may be practised before or after the dry cleaning operation has been performed on the article(s). Some general tests have shown that carrying out the method of the invention after the dry cleaning can be of advantage.

Also, vacuum cleaners can be used for steam injection into article to be treated.

Preferably, in the invention, the clothes or other articles are subjected to steaming treatment in terms of time and/or temperature to provide the effect of the killing all of the HDM and/or the de-naturing of all the allergens, which does not at present happen for example in conventional treatments where steam is used. By the word "all" is to be understood that the processing treatment results in the killing of a substantially greater number of the HDM, or the de-naturing of a substantially greater proportion of the allergen than would currently be achieved with conventional dry cleaning or laundering, and is not intended to limit the invention to 100% killing or denaturing of HDM or allergens.

Alternatively, or in addition, the processing treatment may be modified by the addition of a chemical having the characteristic of being able to kill the HDM and/or de-nature the allergen. Tannic acid is one such chemical, and Benzyl Benzoate is another. Any suitable quantity of either or both of such chemicals may be added.

The clothes may be subjected to a pre-treatment and/or a post treatment for the purposes of the invention.

A dry cleaners or laundry is an ideal location for the treatment to be carried out, as the processing units will have the necessary equipment to perform the method readily, and if not they will still be suitable locations for providing any necessary additional equipment as may be required, but in any event, they will be ideally situated to advertise that they can also provide a "mite eradication treatment" which will encourage customers who are allergy sufferers, or who have allergy sufferers within the family.

This aspect of the invention provides a method which enhances a trading method, and make use of existing establishments to provide a considerable benefit to asthma and the like sufferers.

Claims

1. A method of processing of textile articles which comprises two stages one of which is washing, cleaning drying or pressing of the articles and the other of which is the use of steam for the killing of, and/or the de naturing of allergens of, mites in textile articles.
2. The method according to claim 1, wherein the stages take place in sequence.
3. The method according to claim 2, wherein the stages take place in a tumble drier machine and the stages are tumble drying the articles, and the use of steam for the killing of, and/or the de naturing of allergens of, mites in textile articles.
4. The method according to claim 3, wherein the tumble drier machine is a domestic tumble drier which has the facility to effect the steam treatment
5. The method according to claim 2, wherein the stages take place in a dry cleaning establishment, and the stages are dry cleaning and the use of steam for the killing of, and/or the de naturing of allergens of, mites in textile articles.
6. The method according to claim 5, wherein the steam treatment is effected after a dry cleaning process.
7. The method according to claim 6, wherein the steam treatment process is effected in a tumble drying machine

8. The method according to claim 7, wherein the steam treatment process comprises injecting steam into the garments whilst they are being tumbled
9. The method according to claim 8, wherein the steam is injected into the garments for a short burst
10. The method according to claim 9, wherein the short burst is for a period in the order of 10 seconds.
11. The method according to claim 9 or 10, wherein after the short burst, the garments are tumbled in the presence of the steam for a delay interval.
12. The method according to claim 11, wherein the delay interval is in the region of 20 seconds.
13. The method according to claim 9 or 10 wherein the cycle of short burst and delay interval is repeated.
14. The method according to any of claims 5 to 13, wherein the garments are heated for a pre heat period before being steam treated.
15. The method according to claim 14, wherein the pre heat period is approximately two minutes
16. The method according to claim 15, wherein the garments are pre heated to a temperature in the region of 60-65 degrees centigrade.
17. The method according to claim 1, wherein the stages take place simultaneously.

18. The method according to claim 6 or any claim dependent thereon, wherein the stages take place in a cleaning establishment, and the stages comprise steam cleaning and the use of steam for the killing of, and/or the de naturing of allergens of, mites in textile articles.
19. The method according to claim 6 or any claim dependent thereon, wherein the steam cleaning and the use of steam for the killing of, and/or the de naturing of allergens of, mites in textile articles takes place in a steaming tunnel.
20. The method according to claim 1 or 2, wherein the use of steam for the killing of, and/or the de naturing of allergens of, mites in textile articles takes place in a steaming tunnel.
21. The method according to claim 1 or 2, wherein the use of steam for the killing of, and/or the de naturing of allergens of, mites in textile articles takes place in a pressing former.
22. The method according to any preceding claim, wherein the stage comprising the use of steam for the killing of, and/or the de naturing of allergens of, mites in textile articles, is carried out on the articles whilst they are at ambient temperature.

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- (72) Inventor; and
- (75) Inventor/Applicant (for US only): HOULBROOK, Kenneth [GB/GB]; Roundhill Farm, Patley Bridge, North Yorkshire HG3 5BN (GB).
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— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD TO ERADICATE MITES AND TO DENATURE THEIR ALLERGENS

(57) Abstract: The invention provides that textile articles, and especially articles of clothing, are subjected to a steam treatment for such time and to such extent to mites, in particular the house dust mite (HDM) and/or to de-nature the allergen of such mites. Of particular novelty is that the treatment directed to killing the mites and/or de-naturing the allergen, is carried out in conjunction with other treatments which are performed on the textile articles, such as dry cleaning, washing, drying or the like. In the preferred form, the treatment to kill the mites and/or de-nature the allergen is carried out in dry cleaning establishments, and the treatment is carried out in tumble drying equipment whilst the articles are being tumbled.

WO 01/13962 A1



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**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**

☐ Declaration Submitted with Initial Filing
OR
☒ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

| | |
|--------------------------|-------------------|
| Attorney Docket Number | 101159-26406 |
| First Named Inventor | Kenneth Houlbrook |
| COMPLETE IF KNOWN | |
| Application Number | 10 / 088,215 |
| Filing Date | 02/26/2002 |
| Group Art Unit | |
| Examiner Name | |

As a below named inventor, I hereby declare that:

My residence, mailing address, and citizenship are as stated below next to my name

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD TO ERADICATE MITES AND TO DENATURE THEIR ALLERGENS

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY) 02/26/2002 as United States Application Number ~~or PCT International~~

Application Number 10/088,215 and was amended on (MM/DD/YYYY) (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(j) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

| Prior Foreign Application Number(s) | Country | Foreign Filing Date (MM/DD/YYYY) | Priority Not Claimed | Certified Copy Attached? | |
|-------------------------------------|---------------|----------------------------------|--------------------------|--------------------------|-------------------------------------|
| | | | | YES | NO |
| 9920133.7 | Great Britain | 08/26/1999 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 00031724 | Great Britain | 02/12/2000 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| PCT/GB00/03057 | PCT | 08/08/2000 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto

[Page 1 of 2]

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DECLARATION — Utility or Design Patent Application

| | | | | | | | |
|---|--|--------------------------------------|-------------------------------|--|----|----------------------------------|------------------------------|
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| I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon. | | | | | | | |
| NAME OF SOLE OR FIRST INVENTOR : <input type="checkbox"/> A petition has been filed for this unsigned inventor | | | | | | | |
| Given Name (first and middle (if any)) <u>Kenneth</u> | | | | Family Name or Surname <u>Houlbrook</u> | | | |
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| City | | State | | ZIP | | Country | |
| <input type="checkbox"/> Additional inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto | | | | | | | |